coherence action, So not wash your hands. In order to clarify and explain the importance of hand washing opportunities to introduce hand ATP bioluminescence technology, Corroboration before touching the respirator after (hand washing) hands the number of colonies.
Results: Using ATP bioluminescence technique to enhance hand washing compliance, we found if respirator before hand contact number is 5876 ~ 1142RLU colonies ranging after washing hands can be reduced to 350RLU, explained the importance of washing hands again. This time, by direct observation and respiratory therapy department colleagues interactive process of consensus, clearly defined time points to the scene to wash their hands, a better understanding of the clinical staff who fail to comply reasons. After implementation, respiratory therapist in before clean / aseptic procedure compliance timing can be increased to 100%.
Conclusions: Therefore, and respiratory therapy chief technology officer of communication and reviewing of original plan. The survey results series as a unit scenario simulation teaching and lesson plans, Help to improve the hand-washing compliance.

PS 2-440

AFTER CLEANING THE EFFECTIVENESS OF THE MONITORING INSTRUMENTS CLEANLINESS

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Purpose: Cleaning is an essential step for instruments disinfection or sterilization. Disinfection or sterilization procedures may be failure in case of residual organic substances, such as blood clots, pus, proteins, mucus, oil and other microbes, retained on the instruments will avoid from interacting with disinfection agents by producing biofilm.Therefore, check the performance of cleaning is very important.
Methods: The study was conducted in operation rooms of a teaching hospital. The operation rooms included 23 units, 2 sets automatic washing machine, one ultrasonic cleaning machine. We perform automatic washing machine 33 times, monitoring the effectiveness of ultrasonic cleaning machine 22 times and blood and residual amount of protein up to 90 times weekly. These surveillance cover five major department, such as surgery, gynecomastic, urology , cardiac and plastic.
Results: We found 6 times cleaning failure from the two automatic washing machines. We adopted some procedures, such as washing time (15 minutes was extended to 20 minutes), a washing temperature (45 °Cincreased to 50°C), enzyme washing time (20 minutes was extended to 25 minutes). The results were all qualified after above management.
Conclusions: We apply the indicator before disinfection or sterilization, thus we not only checks the error as soon as possible but also standardized the essential steps-cleaning despite of different operators.

PS 2-441

AN EXPLORATORY STUDY OF MEDICAL PROFESSIONAL STAFFS' KNOWLEDGE, ATTITUDES AND BEHAVIOR ON BUNDLE INTERVENTION

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Purpose: Recognition and prevention of the health-associated infection can be reduced by introduction of bundle intervention. Bundle care is effective for preventing infection. The purpose of this study was trying to understand the study of medical professional staffs' knowledge, attitudes and behavior on bundle intervention.
Methods: This is a cross-sectional study performed at regional teaching hospital in northeast Taiwan. All studies were performed after the approval from the institute of the Institutional Review Board for the Protection of Human Subjects at a regional teaching hospital. After deleting invalid questionnaires, raw data was archived and statistic analyzed by Statistical Package for Social Science for Windows 12.0 software. The research adopts Descriptive statistics, T-test, ANOVA analysis, Scheffe post comparisons, and statistical methods to analyze the relationship of each variable.
Results: The subjects of this study are 346 medical professional staffs of Regional Teaching Hospitals. The structured questionnaires were administered with return rate of 91.3% (316 validated questionnaires).

Table 1、N = 316

Variables	Sex	N	Mean	SD	T Value
Knowledge on Bundle Intervention	Female	266	9.14	1.54	-3.56*
	Male	50	9.67	.77	

* p< .05

Table 2

Correlation	Attitudes	Behavior	Knowledge
Attitudes	1		
Behavior	.325**	1	
Knowledge	.331**	.044	1

** p< .01

Conclusions: Bundle care would be an infection control strategy for improving quality of care. The results provide first-line clinical staff and hospital manager.

- First, Bundle Intervention have a significant positive correlation with knowledge and gender.
- Second, Bundle Intervention have a significant positive correlation with knowledge and attitudes.
- Third, Bundle Intervention have a significant positive correlation with attitudes and behavior.

PS 2-442

EVALUATING THE EFFICACY OF LONG-LASTING ENVIRONMENTAL DISINFECTANT TINOX IN A NICU

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Purpose: The patients in a neonatal intensive care unit (NICU) have compromised immunity. A variety of infectious agents contaminate environment may cause infections. The purpose of this study is to evaluate whether a new composite material of nano-titanium dioxide and nano-silver (TINOX disinfectant) can effectively suppress the microbial load of hospital environments and how long does it work.
Methods: The study was carried out in the NICU of Mackay Children's Hospital. We selected 7 frequent contact surfaces, including incubator door handle, computer keyboard and mouse, suction switch, respirator control panel, physiological monitor, syringe pump, and nursing trolley counter. We determined microbial load by adenosine triphosphate (ATP) monitor. TINOX application was done and the microbial load was determined before and after application. We also measured post-application effect one and two months later without further application. A comparison of microbiologic load before and after TINOX application and post-application effect were analyzed.
Results: The average ATP value before TINOX application was 297 relative light units (RLU), and the average value after TINOX application was 68 RLU. The post-application ATP average value in fourth and sixth weeks was 24 RLU. There was significant decrease of contaminates before and after TINOX application ($p = 0.006$). There was no significant difference between application and post-application periods ($p = 0.447$).
Conclusions: The TINOX could decrease microbial load on contact surfaces effectively. The post-application effect could last at least 8 weeks except nursing trolley counter. Long term study should be done to evaluate the effect of TINOX for health care associated infection.

PS 2-443

A STUDY OF APPLYING WORKSHOP ON-THE-SPOT DEMONSTRATION IN SAFETY NEEDLES IMPLEMENTATION

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Purpose: Needlestick have been found to be the highest frequency of occupational injuries. Researches indicate that some techniques and equipment can prevent needlesticks, such as the use of safety needles. The purpose of

this study was to understand the effectiveness of safety needles in a workshop, and analyzes the differences of using safety needle before and after the on-the-spot demonstration course.
Methods: This study used cross-sectional methods to collect data from 39 participants in an understanding safety needles workshop held in October 2013. Data included participant's characteristics, past needlestick injury experience, course satisfaction, and used paired t-test to compare the differences of using safety needle before and after the course.
Results: The participants are all female. The average age is 23.26±2.91 years old. The participants' satisfaction in self-evaluation grades is 94.95±5.13 points. After using safety needles in workshop, a statistically significant difference ($p \leqq .001$) was found in participants' recognition at the items of "feel safety needle can effectively avoid the needlestick injury", "safety needles can avoid touching the patient's blood", "participant can clearly understand the clinical procedures and precautions of safety needles".
Conclusions: This workshop can help nurses to establish good working habits, enhance knowledge of needlestick prevention, implement needlestick prevention behavior, and reduce the probability of occurrence of needlesticks, so as to establish a safe working environment. Participants learned a lot and recommended us to arrange the practice of safety needles in new entry's training.

PS 2-444

INTEGRATING DIFFERENT MEASURES TO CONTAIN *LEGIONELLA* IN THE HEALTHCARE ASSOCIATED ENVIRONMENT: A SINGLE INSTITUTE'S EXPERIENCE

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Purpose: We described the successful experience of using different measures of containing *Legionella* in our hospital.
Methods: We adopted recommendations from Centers for Disease Control and performed water supply surveillance twice each year. The sampled water was sent for screening for *Legionella* including isolation and serotyping.
Results: Our hospital divided into two divisions, a 600-bed 12- to 30-year-old building complex and a 150-bed 6-year-old green building. The old division was equipped with copper-silver alloy at the upstream of water supply system. The new division saved energy using a heat pump with a peaked temperature of no more than 60°C. We performed water surveillance from the reservoir, cooling tower and the pipelines ends in the wards of immunocompromised patients. The water from the new division was positive for *Legionella* serotype 2−14 (pipeline ends) in May 2013 and serotype 1 (cooling tower) in November 2013. After failing to contain the bacteria by heating, avoiding still water and disinfection of the pipeline ends, we set up a chlorine dioxide pump at the source and achieved continued containment. The water from the old division was positive for *Legionella* serotype 1 (pipeline ends) in September 2013. We successfully contained the bacteria by shock hyperchlorination (sodium hypochlorite 50 ppm) and disinfection of the pipeline ends. There was no confirmed case of Legionnaires' disease in our hospital.
Conclusions: We integrated different measures to contain *Legionella* in our hospital with continued success.

PS 2-445

EFFECTIVENESS OF INTERVENTIONS TO HEALTHCARE WORKER HAND HYGIENE COMPLIANCE AT TWO DELIVERY SUITES OF HUNG VUONG HOSPITAL, VIETNAM

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Purpose: During five years of surveillance, the hand hygiene compliance (HHC) of health care workers (HCWs) increases from 9% to 53% and remains stable at 53% during the last two years. This research compares the HHC rates before and after implementating of interventions at two delivery suites of Hung Vuong hospital aimed to evaluate the effectiveness of interventions.
Methods: A quasi-experimental study was performed from Feburary 2014 to August 2014 at two Hung Vuong hospital delivery suites (A and B). Interventions at delivery suite B included hand hygiene promotion included distribution of posters and supplements, a hand hygiene contest, observation and feedback HHC twice times at before and after intervention phase. Interventions at delivery suite A included hand hygiene promotion and practical training classes of hand hygiene, observation and performance feedback HHC every month. The HHC was directly observed with WHO tool.
Results: 2,114 opportunities were observed before and after interventions at two delivery suites. 76 HCWs (85%) of delivery suite A attended traning classes. After intervention, there was significant improvement of HHC at delivery suite A from 48.6% to 67.9% (OR=2.2; CI 95%: 1.8 − 2.8; $p<0.01$). Delivery suites B had significant decrease of hand hygiene compliance from 42.2% to 30.5% (OR=0.6; CI 95%: 0.5 − 0.8; $p<0.01$). At delivery suite A, only midwives compliance had significant increase ($p<0.01$) before and after intervention, between two delivery suites. The compliance rate of five hand hygiene indications at delivery suite A was also higher than delivery suite B ($p<0.01$).
Conclusion: Hand hygiene promotion strategy is not enough to improve and maintain HCWs' hand hygiene compliance rate. Combination with specific interventions such as training practice skill by focus groups and audit with feedback frequently will have positive effectiveness on HHC.

PS 2-446

NEEDLESTICK AND SAFETY NEEDLE PROMOTION EFFECT ANALYSIS IN A MEDICAL CENTER

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Purpose: Needlestick is the most common medical incidents of healthcare workers, and is the primary cause of blood-borne or body fluid disease transmission. This study was aimed to analyze the cases and reasons of needle stick after the promotion of safety needles, as well as to provide information for future promotion.
Methods: The research is retrospective. We collected the hospital's needlestick cases from 2010-2013, and compared the cases, reasons and sharps before and after the promotion of safety needles. To evaluate the effect of safety needles usage, glass-made objects and surgical equipment were excluded.
Results: In 2010-2013, the needlestick was 26.3%-46.8% in all occupational accidents of the hospital. When glass-made objects and surgical equipment were excluded, the needlestick cases before (2010-2011) and after (2012-2013) promotion was 66 and 49. For sharps, disposable syringe, I.V. catheter and insulin syringe were top causes of injuries before the promotion. In comparison with the cases after the promotion, the disposable syringe and I.V. catheter dropped from 36 to 23 and 10 to 4 respectively. However, the insulin syringe increased from 10 to 14. As for the reason that caused needlestick, needle recap and untimely disposable were the main reasons, and the before and after cases was 15 to 8 and 10 to 6, respectively.
Conclusions: According to the EPInet, the average of needlestick to healthcare workers was 2.1 to 4.7 times every year in 2004 to 2013. Considering the cost, the hospital promoted the safety needle stepwisely. It was estimated that 25.8% of needlestick cases reduction after the promotion, and because of the usage of safety needle, the prevention of needle recap, there was about 57.1% of needlestick cases be prevented. Nevertheless, hypodermic needlestick cases were largely increased because of the penfill insulin injection. Improved and reasonable price for safety needle were expected to make better equipment for the healthcare workers.

PS 2-447

ANTIBIOTIC PROPHYLAXIS FOR URINARY TRACT INFECTIONS AFTER REMOVAL OF URINARY CATHETER: META-ANALYSIS

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Purpose & aims: Catheterization of the urinary tract is associated with an increased risk of bacteriuria and symptomatic urinary tract infection, the risk being associated with the duration of catheterization. Surgical experts advocate discontinuation of catheterization as early as 24-48 hours postoperatively. Bacteriuria in a patient with a catheter can persist after the catheter is removed and can develop into a symptomatic urinary tract infection. The purpose of the study is to clarify whether antibiotic prophylaxis at the